Kramer Electronics, Ltd.

USER MANUAL

Models:

TP-551N, ***HDMI Line Transmitter***

TP-552N, ***HDMI Line Receiver***

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups[1] that are clearly defined by function.

Congratulations on purchasing your Kramer DigiTOOLS® **TP-551N** *HDMI Line Transmitter* and Kramer DigiTOOLS® **TP-552N** *HDMI Line Receiver* which are ideal for:

- Home theater, presentation and multimedia applications
- Rental and staging

The package includes the following:

- **TP-551N** and/or **TP-552N**
- Power adapter (5V DC Input)
- This user manual[2]

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance high resolution cables[3]

2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.

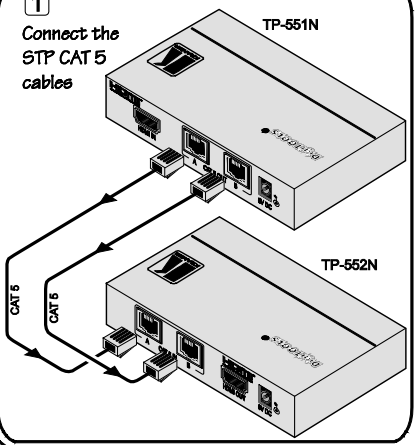
1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

2 Download up-to-date Kramer user manuals from the Internet at http://www.kramerelectronics.com

3 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

Step 1: Connect the STP CAT 5 cables and the output

1 Connect the STP CAT 5 cables



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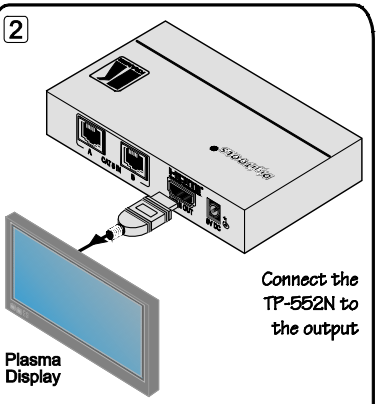
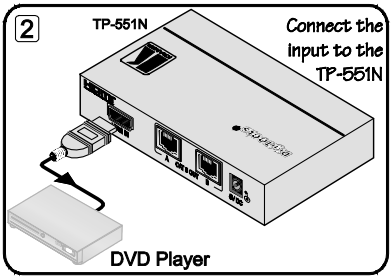


Step 2: Connect the power

Step 3: Connect the input

2



Step 4: Select the EQ.

On the TP-552N, set the EQ. SETUP dipswitches according to the cable length (see section 5.1)

3 Overview

The Kramer **TP-551N** and the **TP-552N** constitute a high quality HDMI line transmitter / receiver system using two STP cables.

The **TP-551N** and the **TP-552N** feature:

- **System Range**[1] - Up to 60m (197ft) at 1080i/SXGA, or up to 40m (131ft) at 1080p, or up to 30m (98ft) at UXGA on shielded **BC-DGKat524** cable; 70m (230ft) at 1080i, or up to 60m (197ft) at 1080p/UXGA on shielded **BC-DGKat623** cable
- Cables – For optimum range and performance, use Kramer's **BC-DGKat524** and **BC-DGKat623**
- Support up to 1.65Gbps bandwidth
- Pass the EDID, HPD[2] and CEC[3] signals from the source to the display device using the cables

The **TP-551N** *HDMI Line Transmitter* features:

- An HDMI input and a pair of RJ-45 CAT 5 output connectors
- Three status LEDs (INPUT, OUTPUT and POWER)

The **TP-552N** *HDMI Line Receiver* features:

- An HDMI output and a pair of RJ-45 CAT 5 input connectors
- Three status LEDs (INPUT, OUTPUT and POWER)
- EQ. adjustment to enhance performance

3.1 Using Twisted Pair Cable

Kramer engineers have developed special twisted pair cables to best match our digital twisted pair products; the Kramer: **BC-DGKat524 (**CAT 5 24 AWG), and the Kramer: **BC-DGKat623 (**CAT 6 23 AWG cable). These specially built cables significantly outperform regular CAT 5 / CAT 6 cables.

1 Note that transmission range depends on the signal resolution, graphics card and display(s), and the distance using non-Kramer CAT 5 and CAT 6 cables may not reach these ranges

2 High Performance Data

3 Consumer Electronics Control

3.2 About HDMI

High-Definition Multimedia Interface (HDMI) is an uncompressed all-digital[1] audio/video interface, widely supported in the entertainment and home cinema industry. It delivers the highest high-definition image and sound quality.

In particular, HDMI[2]:

- Provides a simple[3] interface between any audio/video source, such as a set-top box, DVD player, or A/V receiver and video monitor, such as a digital flat LCD / plasma television (DTV), over a single lengthy[4] cable
- Supports standard, enhanced, high-definition video, and multi-channel digital audio[5] on a single cable
- Transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements
- Benefits consumers by providing superior, uncompressed digital video quality via a single cable[6], and user-friendly connector
- Is backward-compatible with DVI (Digital Visual Interface)
- Supports two-way communication between the video source (such as a DVD player) and the digital television, enabling new functionality such as automatic configuration and one-button play

HDMI has the capacity to support:

- Existing high-definition video formats (720p, 1080i, and 1080p/60), as well as standard definition formats such as NTSC or PAL

1 Ensuring an all-digital rendering of video without the losses associated with analog interfaces and their unnecessary digital-to-analog conversions

2 HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI licensing LLC

3 With video and multi-channel audio combined into a single cable, the cost, complexity, and confusion of multiple cables currently used in A/V systems is reduced

4 HDMI technology has been designed to use standard copper cable construction at up to 15m

5 HDMI supports multiple audio formats, from standard stereo to multi-channel surround-sound. HDMI has the capacity to support Dolby 5.1 audio and high-resolution audio formats

6 HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner

3.3 Recommendations for Achieving the Best Performance

To achieve the best performance:

- Connect only good quality connection STP CAT 5 24 AWG cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise-levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances and position your **TP-551N/TP-552N** away from moisture, excessive sunlight and dust

Caution – No operator-serviceable parts inside unit.

Warning – Use only the Kramer Electronics input power wall adapter that is provided with this unit[1].

Warning – Disconnect power and unplug unit from wall before installing or removing device or servicing unit.

1 For example, part number 2535-052002

4 Your HDMI Line Transmitter / Receiver

This section describes the:

- **TP-551N** *HDMI Line Transmitter*, see section 4.1
- **TP-552N** *HDMI Line Receiver*, see section 4.2

4.1 Your TP-551N HDMI Line Transmitter

Figure 1 and Table 1 define the **TP-551N**:

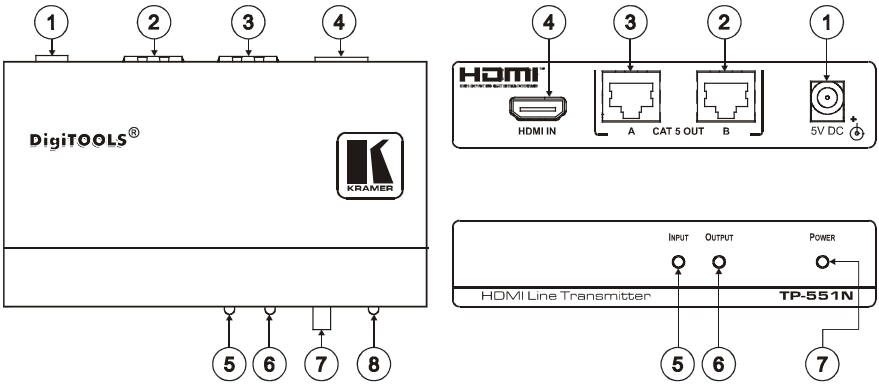


Figure 1: TP-551N HDMI Line Transmitter

Table 1: TP-551N HDMI Line Transmitter Features

#	Feature		Function
1	*5V DC*		+5V DC connector for powering the unit
2	*CAT 5 OUT* RJ-45 Connector	B	Connect to the CAT 5 IN B RJ-45 connector on the **TP-552N**
3		A	Connect to the CAT 5 IN A RJ-45 connector on the **TP-552N**
4	*HDMI IN* Connector		Connect to the HDMI source
5	*INPUT* LED		Lights when an input is connected
6	*OUTPUT* LED		Lights when an output is detected
7	*POWER* LED		Lights when receiving power

4.2 Your TP-552N HDMI Line Receiver

Figure 2 and Table 2 define the **TP-552N**:

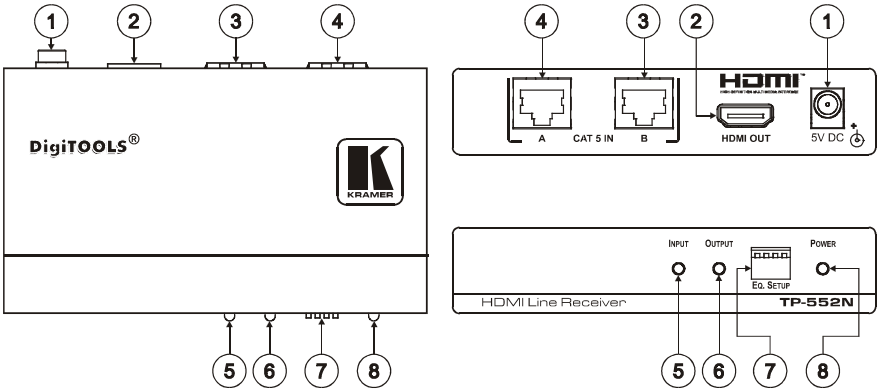


Figure 2: TP-552N HDMI Line Receiver

Table 2: TP-552N HDMI Line Receiver Features

#	Feature		Function
1	*5V DC*		+5V DC connector for powering the unit
2	*HDMI OUT* Connector		Connect to the HDMI acceptor
3	*CAT 5 IN* RJ-45 Connector	B	Connect to the CAT 5 OUT B RJ-45 connector on the **TP-551N**
4		A	Connect to the CAT 5 OUT A RJ-45 connector on the **TP-551N**
5	*INPUT* LED		Lights when an input is detected
6	*OUTPUT* LED		Lights when an output is connected
7	*EQ.* SETUP Dipswitches		Adjust the cable compensation equalization level (see section 5.1)
8	*POWER* LED		Lights when receiving power

5 Connecting the TP-551N and TP-552N

You can use the **TP-551N** *HDMI Line Transmitter* with the **TP-552N** *HDMI Line Receiver* to configure an HDMI transmitter/receiver system.

To connect the **TP-551N** to the **TP-552N**, as illustrated in the example in Figure 3, do the following:

1. Connect the CAT 5 OUT A and B RJ-45 connectors on the **TP-551N** to the CAT 5 IN A and B RJ-45 connectors on the **TP-552N**, respectively, via two STP CAT 5E cables (see section 5.2).
2. On the **TP-552N**, connect the HDMI OUT connector to an HDMI acceptor (for example, a plasma display).
3. Connect the 5V DC power adapter to the power socket and connect the adapter to the mains electricity on both[1] the **TP-551N** and the **TP-552N** (not shown in Figure 3).
4. On the **TP-551N**, connect an HDMI source (for example, a DVD player) to the HDMI IN connector.
5. On the **TP-552N**, adjust the equalization level (see section 5.1).

5.1 Adjusting the EQ. Level via the EQ. Setup Dipswitches

To adjust the EQ. level, set the dipswitches according to the cable length[2], as defined in Table 3:

Table 3: Recommended Equalization Levels Dipswitch Setup[3]

Distance [m]	DIP 1	DIP 2	DIP 3	DIP 4
Up to 50	OFF	OFF	ON	ON
Up to 40	ON	ON	ON	ON
Up to 30	OFF	ON	ON	ON

1 The TP-551N/TP-552N does not include the Kramer power connect feature

2 It is recommended to use a Kramer cable (regular HDMI cable - C-HDMI/HDMI; flat HDMI cable – C-HDMI/HDMI/FLAT(1.3)). The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

3 The optimum dipswitch settings are dependent on the cable type and length, as well as the video resolution and environment. The table shows the settings for typical installations using Kramer cabling. Experimentation may be necessary in a specific application, and any of 16 possible switch combinations may be applied

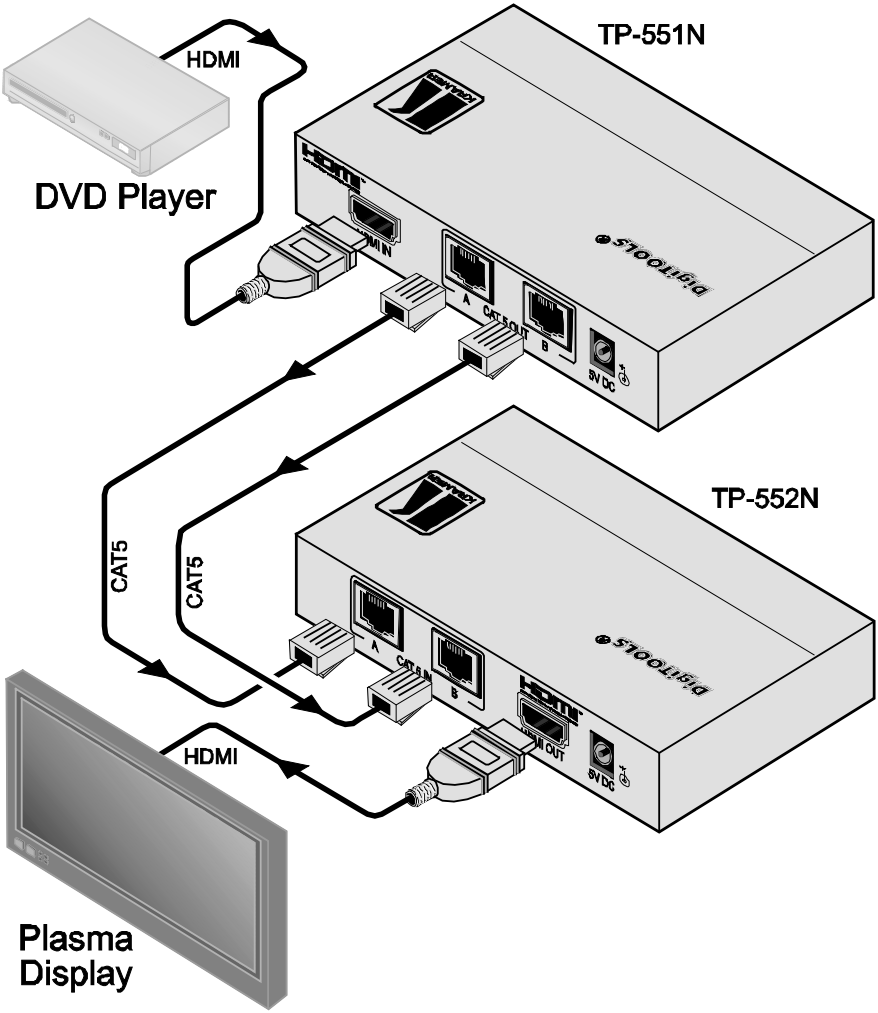


Figure 3: Connecting the TP-551N / TP-552N HDMI Line Transmitter/Receiver

5.2 Wiring the CAT 5 LINE IN / LINE OUT RJ-45 Connectors

Table 4 and Figure 4 define the STP CAT 5 PINOUT[1], using a straight pin-to-pin cable with RJ-45 connectors (note, that the cable Ground shielding must be connected / soldered to the connector shield):

Figure 4: CAT 5 PINOUT

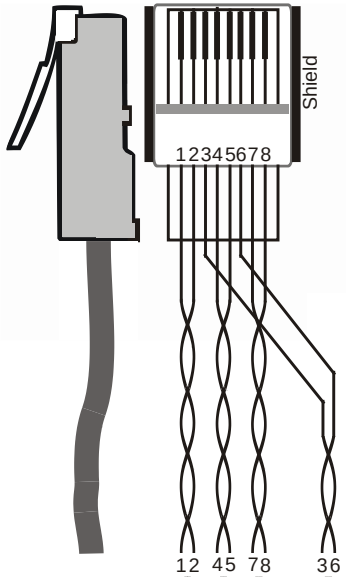


Table 4: CAT 5 PINOUT

EIA /TIA 568A	
PIN	**Wire Color**
1	Green / White
2	Green
3	Orange / White
4	Blue
5	Blue / White
6	Orange
7	Brown / White
8	Brown
Pair 1	4 and 5
Pair 2	3 and 6
Pair 3	1 and 2
Pair 4	7 and 8

EIA /TIA 568B	
PIN	**Wire Color**
1	Orange / White
2	Orange
3	Green / White
4	Blue
5	Blue / White
6	Green
7	Brown / White
8	Brown
Pair 1	4 and 5
Pair 2	1 and 2
Pair 3	3 and 6
Pair 4	7 and 8

1 CAT 6 or similar (heavier gauge) cabling can also be used

6 Technical Specifications

Table 5 includes the technical specifications[1].

Table 5: Technical Specifications of the TP-551N and TP-552N

	TP-551N	TP-552N
INPUTS:	1 HDMI connector	2 CAT 5 IN on RJ-45 connectors
OUTPUTS:	2 CAT 5 OUT on RJ-45 connectors	1 HDMI connector
BANDWIDTH:	Supports up to 1.65Gbps bandwidth per graphic channel	
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI 1.1 and HDCP	
POWER SOURCE:	5V DC, 860mA	5V DC, 650mA
DIMENSIONS:	12.1cm x 7.18cm x 2.42cm (4.76" x 2.83" x 0.95"), W, D, H	
WEIGHT:	0.3kg. (0.67lbs) approx.	
ACCESSORIES:	Power supply (5V/2A)	
OPTIONS:	Kramer HDMI cables[2]: regular cable - C-HDMI/HDMI; flat cable – C-HDMI/HDMI/FLAT(1.3); and BC-DGKat524 (CAT 5 24 AWG) and BC-DGKat623 (CAT 6 23 AWG) cables, RK-3T 19" rack adapter	

1 Specifications are subject to change without notice

2 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
   i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   ii) Product modification, or failure to follow instructions supplied with the product
   iii) Repair or attempted repair by anyone not authorized by Kramer
   iv) Any shipment of the product (claims must be presented to the carrier)
   v) Removal or installation of the product
   vi) Any other cause, which does not relate to a product defect
   vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC* Rules and Regulations: Part 15: "Radio frequency devices Subpart B Unintentional radiators"

CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.

  * FCC and CE approved using STP cable (for twisted pair products)

For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found.
We welcome your questions, comments and feedback.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

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